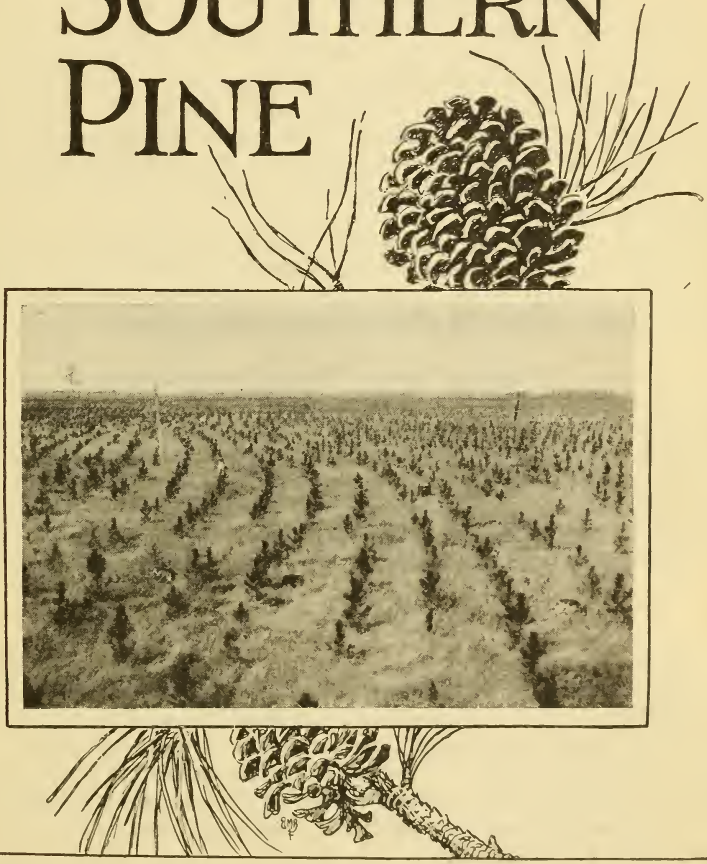
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

LIBRARY
BUREAU OF
DAIRY INDUSTRY

PLANTING SOUTHERN PINE



LEAFLET NO. 32, U.S. DEPARTMENT OF AGRICULTURE

Issued April, 1929.

PLANTING SOUTHERN PINE

By Philip C. Wakeley, *Southern Forest Experiment Station, Forest Service*

Farm land in the South that is unfit for cultivation but too bare of seed trees to reforest naturally makes the farmer little return. So long as it remains idle such land is a liability, slowly eating itself up in taxes. Planted with little trees it becomes an asset, steadily increasing in value, and eventually yielding a handsome return.

All the southern pines grow rapidly. At an early age they yield pulp wood, saw logs, and other valuable products. Furthermore, these young "second-growth" woodlands yield timber for which there is a constantly increasing demand. A stand of young southern pines is an excellent investment for the farmer, as it is for the lumber company that plans continuous operation of its mill or even the sale of its cut-over lands.

Nor is it difficult to convert this waste land into forest land even though it gives no promise of reforesting itself from near-by seed trees. Reforestation by planting is comparatively easy, and frequently total costs are held down to $4 or $5 an acre.

Planting Better Than Direct Seeding

In the South, planting year-old seedlings has proved more successful than sowing seed directly on the area to be reforested. Direct seeding has produced abundant trees in a few instances, but in many others has failed, often because birds ate the seed. Furthermore, the trees produced by direct seeding are less evenly spaced and more apt to interfere with each other's growth than are planted trees.

When to Plant

Planting must always be done after the seedlings' growth ends in the fall and before new growth starts in the spring, and if possible it should be done in wet weather. In the Gulf and Southern Atlantic States the planting season usually opens late in November and extends through January. Farther north the season is correspondingly longer. In the northernmost range of the southern pines, frost divides the season into two parts, of which the spring is probably the better time for planting.

Preparing the Land for Planting

Except in heavy brush or logging trash or in loose sand subject to drifting, it usually pays to prepare the planting site by plowing, every 6 or 8 feet, a shallow furrow running across the slopes. The plowing gets rid of grass, which otherwise not only makes planting

32217°—29

harder but sometimes crowds out the pines. The furrows also serve as a guide to the planters and result in an evenly spaced plantation. A “ middle buster ” makes a better furrow than a turning plow.

Spacing

On a favorable site, where most of the trees may be expected to live and to grow rapidly, a satisfactory spacing of the trees is 6 by 8 feet (about 900 to the acre) or even 8 by 8 feet (about 680 to the acre). On poor ground a spacing of 6 by 6 feet (about 1,210 to the acre) is better, because it allows for losses. Farmers with small acreages would do well to plant 6 by 6 feet, since they are in a position to thin the plantations often and to make use of the small trees taken out in thinning.

Choice of Tree Species

A safe rule in choosing the kind of pine to plant is to take the one which previously grew on the area or which grows on similar land near by. Very little is definitely known about the best conditions for the growth of each kind of tree, and no detailed recommendations for the choice of species can be given here. It may be noted, however, that loblolly and slash pines occur naturally on the lower and wetter pine lands, that long-leaf does better than other species on deep sands, and that short-leaf favors the higher and drier clay soils. Slash pine can be safely planted only on the coastal plain from South Carolina to Louisiana.

Long-leaf differs from all other pines in its peculiar habit of not beginning height growth until the third or even fifth or sixth year from seed. Planted long-leaf seems to start height growth sooner than naturally seeded long-leaf on the same area. Once started, long-leaf grows rapidly. Like slash pine, it is a source of turpentine and rosin as well as lumber products and paper pulp.

An additional advantage of long-leaf and slash is their freedom from damage by the Nantucket pine moth, or tip moth, which kills back the tops of young loblolly and short-leaf pines in many parts of the South and delays their height growth the first few years.

Planting Stock

Although successful plantations have occasionally been made with naturally grown seedlings, very carefully dug up in the woods or old fields, such wildlings generally fail. Nursery-grown seedlings are greatly to be preferred. Nursery stock can frequently be obtained from State foresters, or it can easily be raised by the planter himself.[1] Stock grown from seed collected near by is thought to give better results than stock raised from seed obtained in another part of the country.

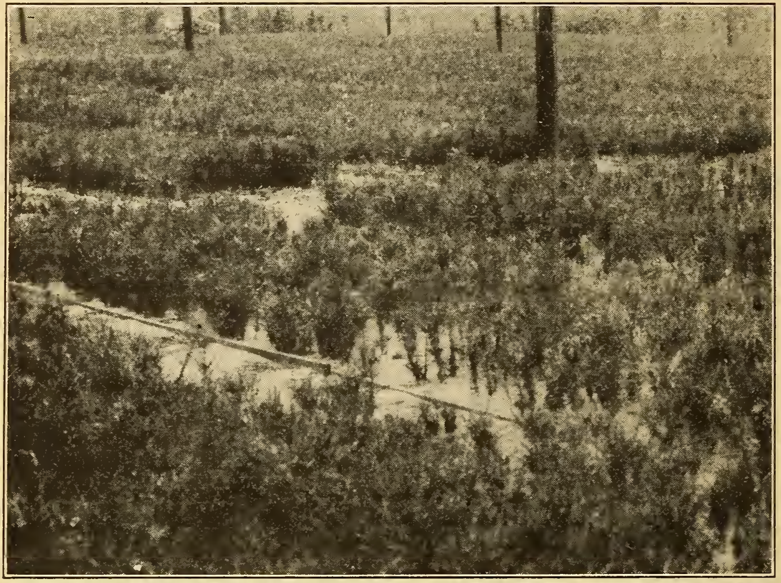
Southern pine seedlings are usually large enough for field planting when 1 year old. (Fig. 1.) Roots longer than 8 inches should be cut off with a sharpened shovel in the process of lifting from the bed, or with a sharp knife after lifting. The more roots a planted seedling has in the upper 8 inches of soil the better its chance to live and grow.

---

[1] WAKELEY, P. C. PRODUCING PINE NURSERY STOCK IN THE SOUTH. U. S. Dept. Agr. Leaflet 35. 1929.

Keeping Seedlings at the Planting Site

If unplanted seedlings must be held over at the planting site for more than two or three days after lifting, they should be spread out and heeled in against the sloping side of a shallow trench, their tops sticking out and their roots well covered by thoroughly packed and watered earth. The trench should be in a shady place.



F-223626

FIGURE 1.—Year-old loblolly pine seedlings ready to plant

Planting with the Dibble

As noted above, planting is usually easier and more successful in plowed furrows than on unprepared ground. The furrows are especially necessary if planting is done with a dibble. The dibble (fig. 2), as used in the South, consists of a wedge-shaped steel blade 3¼ inches wide and 8 or 9 inches long, welded to a ⅞-inch iron bar which is bent into a D handle at the opposite end. The blade is seven-eighths of an inch thick at the top, where it joins the bar, and tapers to a rounded edge below. The total length of the tool is 42 inches, and the weight is about 10 pounds. Any blacksmith can make one at reasonable cost, and it will last for years. It has proved successful in almost all kinds of soil not containing stones, and in stiff clays it is quicker than the mattock or grub hoe.

The use of the dibble requires two men or a man and a boy. One, by a straight downward stroke of the dibble, makes a slit in the middle of the furrow and crosswise to it. (Fig. 4.) The other inserts a seedling in the slit, and the first man closes the bottom of the slit by driving the dibble in on a slant, about 4 inches away, and prying down (not up) on the handle. The man holding the seedling should be able to feel the soil catch hold of the lower roots when this is done. The top of the slit is closed by a slight upward motion of the dibble, followed by a thrust from the planter's heel after the dibble is removed. It is important that the dibble-man open the first slit with a straight downward stroke, or a number of strokes, and not by pushing the dibble handle back and forth. Pushing back and forth makes the bottom of the slit so large that it is almost impossible to close, and the roots accordingly dry out and the seedling dies.

In easy soil an experienced 2-man crew can plant about 2,000 trees a day with the dibble.

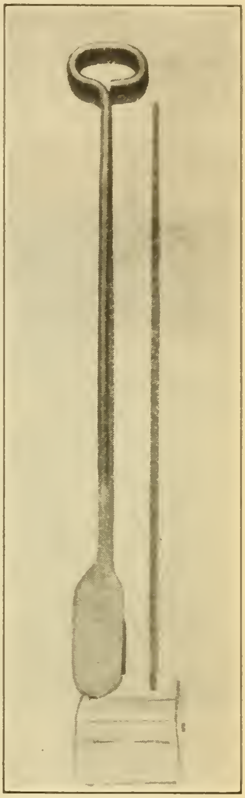

F-225988

FIGURE 2.—The dibble can be homemade and will last for years

Planting with the Mattock

The mattock or grubhoe is the tool ordinarily used in planting where the dibble is not available, where brush prevents the plowing of furrows, or where the soil is stony. It has the advantage of requiring only one man, though two can often work to good advantage. It is used in making slits like those made by the dibble and also in the "hole" method of planting. The latter method consists of digging a hole slightly larger than the root-system of the seedling, holding the seedling in it with one hand and filling in the earth with the other. The earth should be packed several times with the hands as the hole is being filled. If the method is used on land not prepared by furrowing, it is well to clear away the sod or other cover on a square foot or so before making the hole.

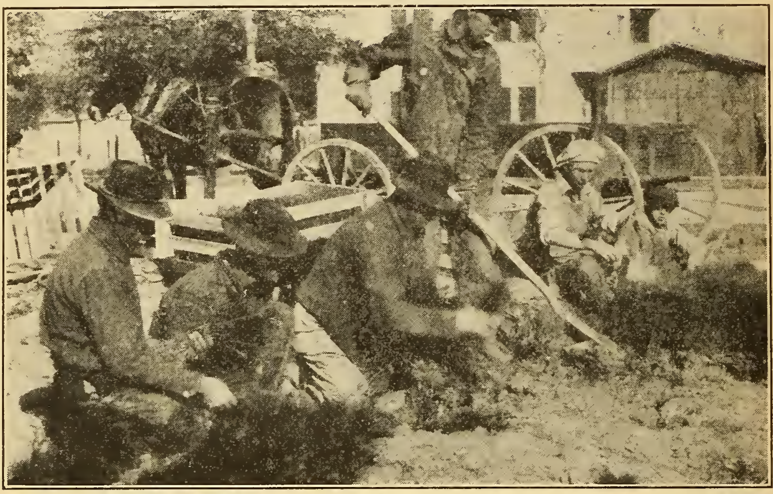
In planting any species, care must be taken to spread the roots out as naturally as possible, and especially to avoid doubling them up. Long-leaf seedlings, which form no stem the first two or three years, should be set about half an inch higher in the field than they grew in the nursery, to prevent soil from washing in and covering the buds. Other southern pines should be set as they stood in the nursery.

Roots Must Be Kept Moist

In lifting and handling stock in the nursery, as well as in planting it in the field, the utmost care must be taken to keep the roots moist all the time. Probably more preventable loss of trees results from drying of the roots in the process of lifting and planting than from all other causes put together.

Keeping the roots moist necessitates rapid handling of the stock, care to keep it out of the sun as much as possible, free use of water, the use of wet sacks or a layer of moist soil to cover seedlings that are waiting to be wrapped, and the use of some material like bog moss (Sphagnum) or shingle shavings ("shingle tow") in packing seedlings for transportation. Sphagnum is easily collected from the ground in wet hollows, where it sometimes makes a spongy mat several inches thick. Seedlings are usually transported in bundles of 50 to 75, the roots packed in wet moss and the trees as a whole wrapped in burlap or heavy paper with only the tops showing in the open end of the package. (Fig. 3.)

Seedlings may be planted directly from the bundle if great care is used to keep them wet and not to break the roots; the usual method, however, is to carry them in a pail containing a few inches of water or sufficient wet moss to keep the roots well covered. They are taken from the pail one at a time and planted quickly, to avoid drying of the roots.



F-194327

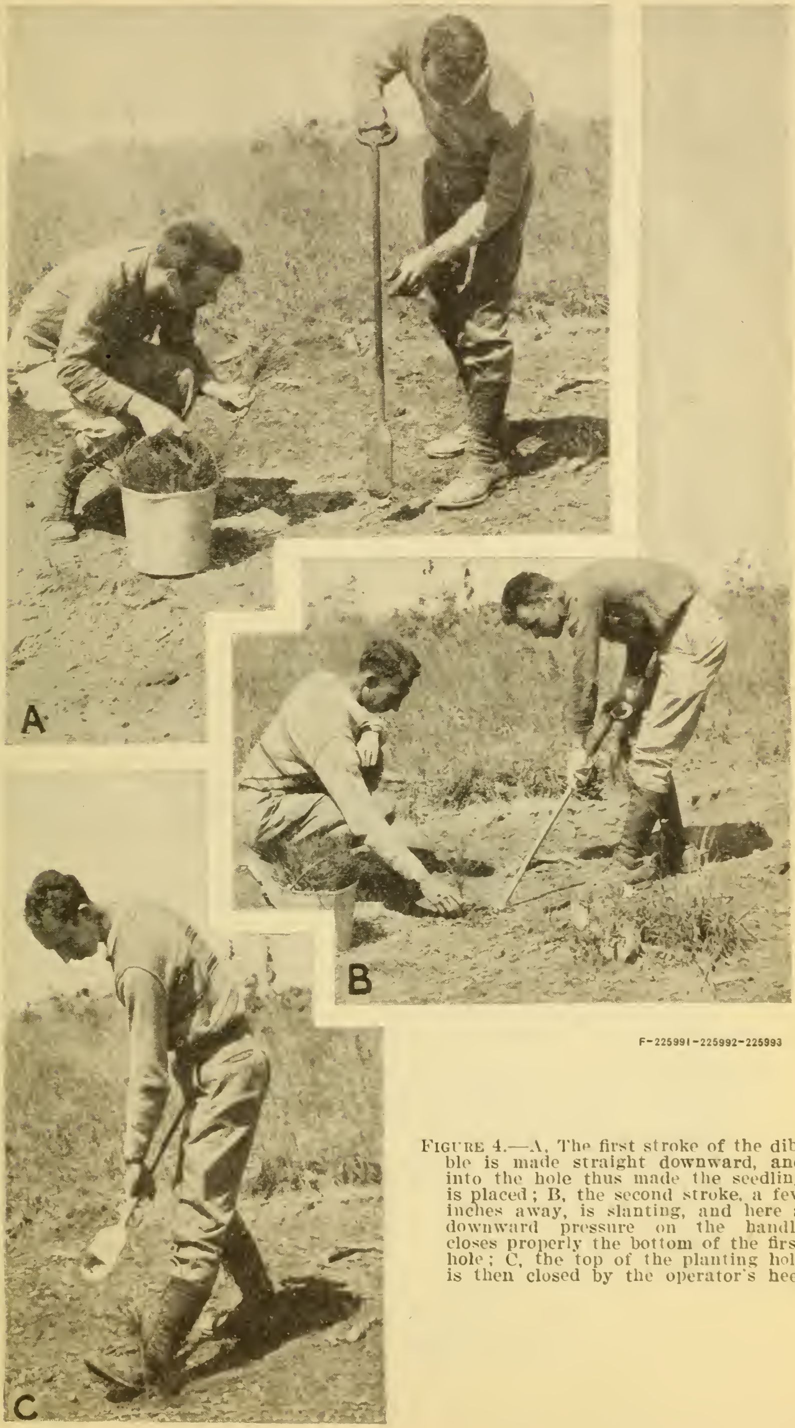
FIGURE 3.—Lifting and bundling year-old pine nursery stock. The roots, cut off cleanly with the shovel 8 inches underground, are packed tightly in wet moss

The Need of Protection from Fire

The investment in forest planting once made, it of course deserves adequate protection, mainly from fire. Fires ruin young plantations of all species, either by stunting the seedlings or by killing them outright. Planting should never be undertaken, therefore, without great care to protect the planted areas from burning. Every possible means should be used to keep fires from starting in plantations and to put them out if they do start. Long-leaf seedlings must, in addition, be given absolute protection against hogs, which root them out and eat them. One hog can destroy 10 or 15 acres of long-leaf plantation in a month.

Other Sources of Injury

Except for fire, drought on poor sites, and easily prevented carelessness in handling seedlings, generally the most serious source of



F-225991-225992-225993

FIGURE 4.—A, The first stroke of the dibble is made straight downward, and into the hole thus made the seedling is placed; B, the second stroke, a few inches away, is slanting, and here a downward pressure on the handle closes properly the bottom of the first hole; C, the top of the planting hole is then closed by the operator's heel

damage to slash, loblolly, and short-leaf pine is rabbits. They kill some seedlings outright and stunt many more by biting off the tops. Long-leaf is practically never damaged by rabbits but is sometimes seriously injured by soil washed in on top of the bud before height growth begins. Damage from washing can be very largely prevented by setting the long-leaf seedlings a little high, as already noted.

Although a number of insects and diseases, including the tip moth on short-leaf and loblolly and the brown spot needle disease on long-leaf, attack the various kinds of pine, none so far known appear to prevent the general success of forest planting.

Survival and Replacements

Pine plantations may be considered a success if 70 per cent of the trees live through the first year after planting, especially if the losses that do occur are scattered evenly over the area instead of falling in groups. First-year survivals well above 70 per cent are common, especially on the better soils. Ordinarily there is little loss after the first year.

If less than 70 per cent of the trees live, and especially if the failures are concentrated in large groups, it may pay to replant the gaps the following year. The best seedlings available should be used for replacements and extra care should be taken in planting them.

Further Information

Further information regarding planting practice in the South can be obtained by addressing the State Forester, the Southern Forest Experiment Station, New Orleans, La., or the Forest Service, United States Department of Agriculture, Washington, D. C. Most States have also an extension forester, who can be addressed in care of the State agricultural college. Addresses of State foresters, or those acting in a similar capacity, are as follows:

Alabama: Page S. Bunker, State Forester, Montgomery Ala.
Arkansas: W. K. Williams, jr., Extension Forester, 310 Federal Bank and Trust Building, Little Rock, Ark.
Florida: Harry Lee Baker, State Forester, Tallahassee, Fla.
Georgia: B. M. Lufburrow, State Forester, State Capitol, Atlanta, Ga.
Louisiana: W. R. B. Hine, Superintendent of Forestry, Department of Conservation, New Orleans, La.
Maryland: F. W. Besley, State Forester, 1411 Fidelity Building, Baltimore, Md.
Mississippi: Roy L. Hogue, State Forester, Jackson, Miss.
North Carolina: J. S. Holmes, State Forester, Raleigh, N. C.
Oklahoma: George R. Phillips, Secretary, Oklahoma Forest Commission, Oklahoma City, Okla.
South Carolina: Lewis E. Staley, State Forester, Columbia, S. C.
Tennessee: R. S. Maddox, State Forester, Nashville, Tenn.
Texas: E. O. Siecke, Director, Texas Forest Service, College Station, Tex.
Virginia: Chapin Jones, State Forester, University, Va.

ADDITIONAL COPIES
OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
U. S. GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
AT
5 CENTS PER COPY
▽